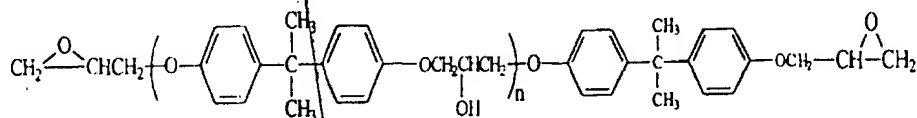


What is claimed is:

1. An electrolyte gel solution comprising a crosslinked product of (i) a prepolymer for forming an epoxy resin, (ii) an amine, (iii) a lithium salt and (iv) an organic solvent.

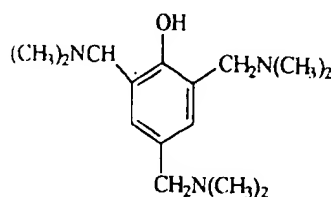
2. The electrolyte gel solution according to claim 1, wherein the prepolymer for forming the epoxy resin is a compound represented by formula 1:



.....(1)

wherein n is an integer in the range of 2 through 100.

3. The electrolyte gel solution according to claim 1, wherein the amine is represented by formula 2:



.....(2)

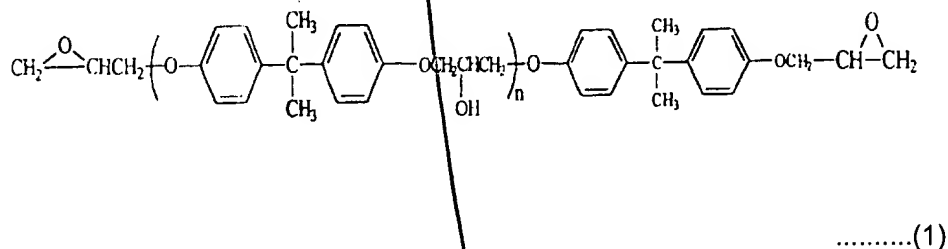
4. The electrolyte gel solution according to claim 1, wherein the molar ratio of the prepolymer for forming the epoxy resin to the amine is in the range of 1:1 to 5:1.

5. The electrolyte gel solution according to claim 1, wherein the ratio of the total weight of the prepolymer for forming the epoxy resin and the amine to the total weight of the lithium salt and the organic solvent is in the range of 1:1 to 1:20.

6. The electrolyte gel solution according to claim 1, wherein the lithium salt is at least one salt selected from the group consisting of lithium perchlorate (LiClO_4), lithium tetrafluoroborate (LiBF_4), lithium hexafluorophosphate (LiPF_6), lithium trifluoromethanesulfonate (LiCF_3SO_3) and lithium bistrifluoromethanesulfonyl amide ($\text{LiN}(\text{CF}_3\text{SO}_2)_2$), and the organic solvent is at least one carbonate based solvent selected from the group consisting of propylene carbonate (PC), ethylene carbonate (EC), dimethylcarbonate (DMC), methylethyl carbonate (MEC), diethylcarbonate (DEC) and vinylene carbonate (VC).

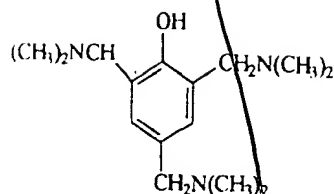
7. A lithium battery comprising:
an electrode assembly comprising a cathode, an anode and a separator interposed between the cathode and the anode;
an electrolyte gel solution comprising a crosslinked product of (i) a prepolymer for forming an epoxy resin, (ii) an amine, (iii) a lithium salt and (iv) an organic solvent; and
a case for accommodating the electrode assembly and the electrolyte gel solution.

8. The lithium battery according to claim 7, wherein the prepolymer for forming the epoxy resin is a compound represented by formula 1:



wherein n is an integer in the range of 2 through 100.

9. The lithium battery according to claim 7, wherein the amine is represented by formula 2:



.....(2)

10. The lithium battery according to claim 7, wherein the molar ratio of the prepolymer for forming the epoxy resin to the amine is in the range of 1:1 to 5:1.
11. The lithium battery according to claim 7, wherein the ratio of the total weight of the prepolymer for forming the epoxy resin and the amine to the total weight of the lithium salt and the organic solvent is in the range of 1:1 to 1:20.
12. The lithium battery according to claim 7, wherein the electrolyte gel solution is obtained by mixing a first solution of the prepolymer for forming the epoxy resin and the amine with a second solution of the lithium salt and the organic solvent, injecting the resultant mixture into the case having the electrode assembly therein to form a solution filled case, and thermally polymerizing the solution filled case.
13. The lithium battery according to claim 12, wherein the temperature of thermal polymerization is in the range of 70 to 200°C.
14. The lithium battery according to claim 7, wherein
the lithium salt is at least one salt selected from the group consisting of lithium perchlorate (LiClO_4), lithium tetrafluoroborate (LiBF_4), lithium hexafluorophosphate (LiPF_6), lithium trifluoromethanesulfonate (LiCF_3SO_3) and lithium bistrifluoromethanesulfonyl amide ($\text{LiN}(\text{CF}_3\text{SO}_2)_2$), and
the organic solvent is at least one carbonate based solvent selected from the group consisting of propylene carbonate (PC), ethylene carbonate (EC), dimethylcarbonate (DMC), methylethyl carbonate (MEC), diethylcarbonate (DEC) and vinylene carbonate (VC).
15. The lithium battery according to claim 7, wherein
the electrode assembly is formed of a winding type electrode assembly, and

the case is in the form of a pouch.

16. The lithium battery according to claim 7, wherein the separator is a polyethylene separator or a polypropylene separator.

17. A method of forming a lithium battery, comprising
mixing a prepolymer for forming an epoxy resin and an amine to form a first solution;
mixing a lithium salt and an organic solvent to form a second solution;
mixing the first and second solutions to obtain an electrolyte gel solution;
injecting the electrolyte gel solution into a case containing a cathode, an anode and a separator interposed between the cathode and the anode; and
thermally polymerizing the electrolyte gel solution after injection.

18. The method of according to claim 17, wherein the temperature of thermal polymerization is in the range of 70°C to 200°C.

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